CLAIMS

1. A method for controlling the voltage on a lens of an electron emitting device, the method comprising the steps of:

supplying an emitter voltage to an electron emitter in the electron emitting device, wherein a current amplitude is established;

sensing the emitter voltage on the electron emitter;

supplying a non-inverted input voltage to an amplifier that follows the emitter voltage; and

providing an amplifier output voltage from the amplifier to the lens, wherein the amplifier output voltage corresponds to the emitter voltage at the electron emitter.

2. The method of claim 1, further comprising the step of:

driving other lenses in the emitting device based on the amplifier output voltage supplied by the amplifier.

3. The method of claim 1, further comprising the step of:

adjusting the amplifier output voltage so that the lens optimizes the focal point of a beam emitted from the electron emitter.

4. The method of claim 3, wherein the amplifier output voltage is adjusted by varying the gain of the amplifier.

5. The method of claim 4, wherein the gain is varied by a variable resistor coupled to the amplifier.

6. The method of claim 1, wherein said sensing step is performed by a sensing diode.

7. The method of claim 1, wherein said sensing step is performed by an electronic switch.

8. The method of claim 1, wherein said sensing step is performed by one or more high-breakdown voltage MOS transistors.

9. The method of claim 1, wherein said amplifier is a non-inverting summer circuit that sums the emitter voltage and a desired lens voltage.

10. A storage device comprising:

an electron emitter;

a lens to adjust the focal point of a beam emitted from the electron emitter;

a sensing switch coupled to the electron emitter to sense voltage on the electron emitter;

an amplifier coupled to the sensing switch that follows the voltage on the electron emitter, wherein the sensing switch is coupled to an input of the amplifier and the output of the amplifier is coupled to the lens; and

wherein the output of the amplifier drives the voltage on the lens.

11. The storage device of claim 10, further comprising:

a variable resistor coupled to an input of the amplifier, wherein the gain of the amplifier is adjusted according to the variable resistor.

12. The storage device of claim 10, wherein the sensing switch is a sensing diode.

13. The storage device of claim 12, further comprising:

a plurality of additional sensing diodes coupled to the input of the amplifier and other electron emitters.

14. The storage device of claim 12, further comprising:

a compensating diode coupled to the sensing diode and the amplifier, wherein the compensating diode compensates for a voltage drop across the sensing diode; and

a bias resistor coupled to the amplifier side of the compensating diode and ground.

15. The storage device of claim 10, further comprising:

an emitter current control switch; and

a current control circuit coupled to the sensing switch, emitter current control switch, and the variable resistor, wherein the current control circuit establishes the current amplitude supplied to the electron emitter.

16. An electron emitting storage device, comprising:

emitter means for emitting electrons toward a storage medium;

lens means for focusing emitted electrons from the emitter means into an optimized focal point on the storage medium;

means for sensing voltage applied to the emitter means;

amplifier means for providing an output voltage to the lens means that is relative to the voltage applied to the emitter means; and

means for adjusting input voltage to the amplifier means so that the output voltage to the lens means changes.

17. The electron emitting storage device of claim 16, further comprising:

means for controlling the current in the emitter means; and

switching means for activating the emitter means.

18. The electron emitting storage device of claim 16, wherein the amplifier means is in a non-inverting configuration.

19. A method for controlling the voltage on a lens of an electron emitting device, the method comprising the steps of:

supplying an emitter voltage to an electron emitter in the electron emitting device;

sensing the emitter voltage on the electron emitter;

summing the sensed emitter voltage and a desired lens voltage; and

providing a voltage output that is the sum of the emitter voltage and the desired lens voltage to the lens of the electron emitting device.

20. The method of claim 19, further comprising the step of:

driving other lenses in the emitting device based on the provided voltage output.